



Infinity Cascade Speaker System

Flat and fit.



BY MARK FLEISCHMANN

How would you feel if you woke up one day in a perfect body? You'd pull back the blanket and look down on a perfectly flat tummy (something I haven't seen in years, although heaven knows I'm trying). Combination skin is a thing of the past—you seem to have been remade in some wonderful material. Eager to check yourself out in a mirror, you cross the room to find yourself resculpted in new and slimmer proportions. And, when you open your mouth, depending on your gender, you

have either the purest soprano or the noblest baritone. In fact, you have both. I think this metaphor may be getting a bit perverse.

The point I'm meandering my way around to is that Infinity's new Cascade line reimagines every aspect of the loudspeaker. The newest feature is a reshaped woofer, a flat, rectangular diaphragm that's not cone shaped. The woofer and the tweeter are both made of a proprietary ceramic/aluminum blend not unfamiliar to Infinity fans. **The look is as distinctive as a fingerprint, and the sound is superlative**

in ways that correct ailments common to most speakers.

Oh MoMA

The Cascades could be in an exhibit at the Museum of Modern Art. Their newly designed, flat, rectangular woofers share the front with a conventional dome tweeter. Although they're trimmed in plastic, the drivers actually attach to the underlying wood. The Model Seven floorstanding speaker presents an unbroken front surface; the high-gloss black of the speaker transitions to the stand's gray matte aluminum.

The top of the Model Seven tapers back, making it appear slightly smaller than it really is. This tapering reappears on both ends of the Model Five monitor, the Model Three C center speaker, and the Model Fifteen subwoofer. The sides and the rear are constructed of curved extruded aluminum in matte black. When I knuckle-rapped the enclosures, I heard various pitches in various places, but they were all muted compared with the pitches of my fiberboard-enclosed reference speakers. These speakers are solid.

Conspicuous in its absence is the cone-shaped woofer that 99 percent of speaker designs employ. Round cones and sharp-cornered, rectangular speaker enclosures are easy to manufacture, but fitting the former into the latter is a waste of space. Boxy enclosures also

encourage sound waves to bounce between their parallel walls.

In contrast, Infinity's newly designed diaphragm and slim, irregular, acoustically hip enclosure are tailor made for one another. The flat (well, nearly flat) diaphragm doesn't require much depth in the enclosure. Even the voice coils that propel it into motion—a pair of long loops of thin wire behind the driver—take up little space. Yet they have six times more surface-contact area than the typical round-cone/coil combo, making for better driver control.

Try to visualize this: When a single round voice coil pushes and pulls a cone woofer, motion is greatest in the center, where the moving coil is attached, and least at the sides. The sound waves that these different areas generate are out of phase with one another, resulting in time-domain smear. When the Cascades' two long loop coils push and pull the woofer, the surface moves in a more uniform way, and the sound waves that this surface generates are in phase.


Using computer-aided visualization, the Infinity people noticed that some parts of the diaphragm were reacting to the underlying magnets in different ways. The edges were not as well controlled. To smooth out the differences, they added ribs to the surface and gussets to the sides. This strengthens the diaphragm and enables it to move more like a single piston, minimizing the uncontrolled motion, which is audible at high volumes as breakup. And, because the diaphragm more efficiently dissipates heat, the coil temperature stays low and steady, even with higher voltages. That endows the speakers with greater dynamic range and less dynamic compression.

Taking a Stand

Like a nation that wins the war and loses the peace, speaker makers in search of friendlier forms often

design good speakers and mess up the stands. The more of them I review, the more I dread a floor full of pieces waiting to be assembled.

AT A GLANCE INFINITY CASCADE SPEAKER SYSTEM



These listings are based on the manufacturer's stated specs; the HT Labs box below indicates the gear's performance on our test bench.

SUBWOOFER: MODEL FIFTEEN

Connections:	Line-level stereo input and output
Enclosure Type:	Vented
Woofer (size in inches, type):	6, ceramic/aluminum cone (4)
Power Rating (watts):	800
Crossover Bypass:	No
Available Finishes:	High-Gloss Black, High-Gloss Silver, Cherry hardwood
Dimensions (H x W x D, inches):	13 x 37 x 8.5
Weight (pounds):	98
Price:	\$1,499

SPEAKER:

Type:

Tweeter (size in inches, type):

Woofer (size in inches, type):

Nominal Impedance (ohms):

Recommended Amp Power (watts):

Available Finishes:

Dimensions (H x W x D, inches, on stands):

Weight (pounds, no stands):

Price:

Model Seven

Two-way, floorstanding

1, ceramic/aluminum dome

7.75 x 3.4, ceramic/aluminum panel (1)

8

10–100

High-Gloss Black, High-Gloss Silver, Cherry veneer

47 x 10.5 x 11.5

9

\$799/each

Model Three C

Two-way, center

1, ceramic/aluminum dome

7.75 x 3.4, ceramic/aluminum panel (2)

8

10–150

High-Gloss Black, High-Gloss Silver, Cherry veneer

5.5 x 30.75 x 6

18

\$799

Model Five

Two-way, monitor/surround

1, ceramic/aluminum dome

7.75 x 3.4, ceramic/aluminum panel (1)

8

10–100

High-Gloss Black, High-Gloss Silver, Cherry veneer

30.25 x 7.75 x 8.5

13.5

\$699/each

HT Labs Measures: Infinity Cascade Speaker System

- L/R Sensitivity:
84 dB from 500 Hz to 2 kHz
- Center Sensitivity:
86 dB from 500 Hz to 2 kHz
- Surround Sensitivity:
83.5 dB from 500 Hz to 2 kHz

This graph shows the quasi-anechoic (employing close-miking of all woofers) frequency response of the Model Seven L/R (purple trace), Model Fifteen subwoofer (blue trace), Model Three C center channel (green trace), and Model Five surround (red trace). All passive loudspeakers were measured with grilles at a distance of 1 meter with a 2.83-volt input and scaled for display purposes.

The Model Seven's listening-window response (a five-point average of axial and +/-15-degree horizontal and vertical responses) measures +1.16/-1.47 decibels from 200 hertz to 10 kilohertz. The -3-dB point is at 100 Hz, and the -6-dB point is at 89 Hz. Impedance reaches a minimum of 4.81 ohms at 314 Hz and a phase angle of +45.23 degrees at 3.3 kHz.

The Model Three C's listening-window response measures +0.82/-3.62 dB from 200 Hz to 10 kHz. An average of axial and +/-15-degree horizontal responses measures +0.78/-3.72 dB from 200 Hz to 10 kHz. The -3-dB point is at 247 Hz, and the -6-dB point is at 91 Hz. (Please note that, while there is no boundary-compensation switch, the response appears to be intentionally tapered below 500 Hz to compensate for typical center-channel placement anomalies, which makes some of these results appear a bit unusual.) Impedance reaches a minimum of 4.39 ohms at 1.1 kHz and a phase angle of +55.17 degrees at 1.8 kHz.

The Model Five's listening-window response measures +0.92/-2.32 dB from 200 Hz to 10 kHz. The -3-dB point is at 79 Hz, and the -6-dB point is at 71 Hz. Impedance reaches a minimum of 4.79 ohms at 295 Hz and a phase angle of +44.16 degrees at 3.3 kHz.

The Model Fifteen's close-miked response, normalized to the level at 80 Hz, indicates that the lower -3-dB point is at 37 Hz and the -6-dB point is at 33 Hz. The upper -3dB point is at 183 Hz using the LFE input. —MJP

Infinity immediately scored ergonomic points by reducing the assembly instructions for the Model Seven to one step: Put the speaker on the stand. Assembly time: three seconds. The smaller Model Five required two screws to attach a triangular metal bracket that grips a metal tongue at the top of the stand. Assembly time: half a minute.

The stands are cast aluminum and *extremely* heavy. They give the speakers a nearly resonance-free foundation and would make excellent murder weapons. Round gold-nut binding posts face directly downward in the Model Seven and diagonally upward in the Model Five, providing access for spade lugs but not for banana plugs. Blobs of plastic in the holes block banana-plug insertion. These are a requirement for sale in Europe and are removable. I used an elderly but reliable set of Monster THX ribbon cables with bare tips.

Grilles come in the form of a scroll-like object made of the thinnest, softest, most lovely material ever used to cover a baffle. Although it's synthetic, it feels like silk. The ends attach magnetically. I tried one, and it was beautiful—but not as interesting as the unadorned speaker. I decided to leave the grilles off.

The subwoofer has a unique hor-

izontal shape that's designed to sit close to a wall. Inside is a quartet of 6-inch, square, down-firing woofers in an enclosure that's tapered at the sides, like the other speakers.

Equalizing the sub was part of the setup process. Infinity calls this R.A.B.O.S., the Room Adaptive Bass Optimization System. Supplied R.A.B.O.S. accessories include a test-tone CD, a sound meter that specializes in bass, a plastic overlay, and a set of instructions. The latter seems formidably intricate at first glance, but the process is fairly simple.

As each test tone plays, you plot points on a frequency-response graph. When the curve is complete, connect the dots to determine the correct settings for the sub's volume and crossover controls. To determine the width—that is, how much of the audible spectrum the correction will affect—place the plastic overlay atop the graph. A few simple calculations are necessary. I did them on scrap paper, but there's also an online calculator. Twist three knobs, and you're done.

Thus, reducing room interaction soon paid dividends. **The peak in response at my room's resonant frequency pretty much disappeared.** Eliminating this distraction freed me to focus more intently on story lines and musical moods. I was rarely

aware of the sub's existence except at peak bass moments (and that's how it should be). The handoff from sub to speakers at the crossover frequency was seamless.

My reference gear, as usual, included a Rotel RSX-1065 A/V receiver. The Rotel combines dynamically potent high-current amplification with a scrupulously defined top end—don't use the Cascades with anything less. Because the speakers are so fond of high-rez signal sources, my Integra DPS-10.5 universal disc player took on a more prominent role than usual.

Strange Work if You Can Get It

In search of something dynamically taxing, I rented *Get Rich or Die Tryin'*, based on the life of rapper Curtis "50 Cent" Jackson, and got an unexpectedly nuanced drama instead. As the movie started with Jackson's voiceover, I turned up the volume. I wanted to catch the softly but precisely enunciated consonants that are part of his signature vocal style, affected by the bullet lodged in his tongue. At some point, I figured, as the all-too-realistic violence kicked in, I'd have to engage the Dolby Digital midnight-movie mode or at least drop the volume. But the subsequent gunplay was dynamically

INFINITY CASCADE SPEAKER SYSTEM					OVERALL RATING
Build Quality	Value	Features	Performance	Ergonomics	95
<ul style="list-style-type: none"> Absolute solidity, flawless detailing Ceramic/metal woofers and titanium tweeters Heavy aluminum stands 	<ul style="list-style-type: none"> It's impossible to compare this to other products New technology doesn't come cheap 	<ul style="list-style-type: none"> Infinity's totally redesigned woofer makes its debut here R.A.B.O.S. equalizes the big sub 	<ul style="list-style-type: none"> Gets the most out of high-rez SACD releases Combination of wide sweet spot and tight image focus Low dynamic-compression bass 	<ul style="list-style-type: none"> Plenty to catch the eye, nothing to offend it Stand mounting is very easy 	
95	90	96	98	93	<p>Infinity's Cascade Series uses a newly designed flat diaphragm to muster a large and well-defined soundstage with exceptional transparency, definitive detail, and strong dynamics. For imaging, it is the reference against which we will judge speakers in future reviews. Add equalized monster bass, and you've got a product that amazes.</p>
<p>General information</p> <p>Cascade Model Seven Floorstanding Speaker, \$799/each; Cascade Model Three C Center-Channel Speaker, \$799 Cascade Model Five Monitor/On-Wall Speaker, \$699/each; Cascade Model Fifteen Subwoofer, \$1,499 Infinity Systems, (516) 674-4463, www.infinitysystems.com → Dealer Locator Code IFY</p>					

proportional and not excessive. I found myself with a growing respect for both the star—whether despite or because of his frosty reserve, I’m not sure—and the delicacy of the mix.

Munich, despite its heightened moral complexity, came with an extravagantly ultraviolet procession of explosions and gunshots that tested the mettle of every driver in the system. Right from the opening frames, the Cascades grabbed me with the soundtrack’s mourning female vocal and string orchestra, and they never let go.

The sub did well with minor details, like the low ambient hum of trains and buses, but also stood up to the stiffer demands of the hotel explosion—not a single detonation but an extended ballet of destruction. It was convincing enough to be unnerving, as a movie on this subject should be.

The next thing I played after *Munich* was the stereo SACD of *Bernard Herrmann: The Film Scores* by Esa-Pekka Salonen and the Los Angeles Philharmonic. It includes excerpts from six of the soundtracks Herrmann wrote for Alfred Hitchcock, including a suite from *Psycho*, a string-orchestra masterpiece that could outgun any heavy metal band. Going from angst-ridden terrorism and assassination to a soundtrack that evokes someone being stabbed in the shower was a soft landing of sorts—I could almost hear Sir Alfred saying, “Don’t worry, dear. It’s just a *moovie*.” Even with no surround mix and just two speakers operating, the Cascades could throw out a convincing soundstage that dominated every seat in the room. I could sit directly in front of the left speaker and still hear continuous imaging with no hole in the

middle. The voluptuously dissonant string-and-brass textures that open the *Vertigo* suite billowed like the sails of a clipper ship caressed by the wind, the ostinatos evoking the opening credits’ unforgettable spiraling graphics.

An SACD surround mix of Beethoven’s ninth symphony didn’t fare as well. The 1977 analog recording by Herbert von Karajan and the Berlin Philharmonic was mastered in 96/24 PCM before its transfer to SACD. In my opinion, the string sound is less refined than that of a native or straight-from-analog SACD, and the Cascades didn’t hesitate to tell me how they felt about that. Despite the skillful performance, what should have been a rich assortment of vocal and instrumental tone color came out monochromatic and lacking in spatiality. I wouldn’t call these speakers “ruthlessly revealing”—code language for products that make a large percentage of recordings sound unpleasant—nor did they add any sweetening of their own. They were just finicky and truthful, as an audiophile should be. In this case I think they were actually disappointed in the recording.

They cheered up when I got to *Sinatra at the Sands* on DVD-Audio. I could hear the effect of cigarettes on Sinatra’s lungs and throat, the precision of the consonants that flowed delicately and precisely through his teeth and lips, the way all of this interacted with the microphone and the acoustics of the club, and individual voices in the audience laughing at his awful jokes. The focus couldn’t have been tighter or the spotlight brighter.

Of the dozens of CDs I played, the most memorable was *10,000 Clowns on a Rainy Day* by Jan Akkerman. The former guitarist of

HIGHLIGHTS

- Innovative flat woofer diaphragm
- Ceramic/metal driver materials
- Best-looking Infinity speakers ever

Focus has lived down his former band’s 1971 yodeling hit “Hocus Pocus” to pursue a lengthy solo career. His trusty Les Paul is the focal (sorry) point of this mainly instrumental live double-CD set. The Cascades brought it to the front of the mix, slightly in front of the speakers in Dolby Pro Logic II, while the band lingered slightly behind. It was like looking at a richly colored object against a black-and-white background. Akkerman’s supple intonation was a living, breathing, dancing sonic creature. Although visual responses to sounds are routine for me, in this case, I also *tasted* the guitar: It tasted like dark chocolate.

Like waves breaking on a beach, reviewing these speakers was a long and steady succession of favorable impressions. They looked great. They were easy to set up. There was no screeching, no distancing, and no sweetening. The equalized subwoofer nimbly sidestepped my room’s bass hump. Broad off-axis response from the flat woofers and waveguide-enhanced tweeters liberated me from the sweet spot. The Cascades gave me an unparalleled freedom to listen from any spot in the room and with any kind of material, and, for that, I am both surprised and grateful. 🎧

* Audio editor Mark Fleischmann is also the author of the annually updated book *Practical Home Theater* (www.quietriverpress.com).



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